

SEQUENCE LISTING

<110> Aptus Genomics, Inc.
YAO, Yong
CAO, Liang

<120> Novel Cell-Based Assays for G-Protein-Coupled Receptor-Mediated Activities

<130> 53735-5004-US

<150> 60/330,663

<151> 2001-10-26

<160> 8

<170> PatentIn version 3.1

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<211> 1995

<212> DNA

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<221> CDS

<222> (1)..(1992)

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Gly Ile His Ser Pro Glu Val Arg Phe Asn Arg Leu Leu His Phe Ala
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Ser Pro Glu Leu Gln Arg Leu Ala Glu Met Asp Thr Pro Arg Arg Gly
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Arg Gly Gly Phe Gln Arg Ile Val Arg Leu Val Gly Val Ile Arg Asp
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Trp Ala Asn Lys Asn Phe Arg Glu Glu Glu Pro Arg Pro Asp Ser Phe
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Leu Glu Arg Phe Arg Gly Pro Glu Leu Gln Thr Val Thr Thr His Gln
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Gly Asp Asp Lys Gly Gly Lys Asp Gly Glu Gly Lys Gly Thr Lys Lys
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Lys Phe Glu Leu Phe Val Leu Asp Pro Ala Gly Asp Trp Tyr Tyr Arg
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195 200 205

Asp Pro Lys Lys Leu Arg Asp Asn Tyr Ile His Thr Leu Gln Phe Lys
210 215 220

Leu Asp Val Ala Ser Ile Ile Pro Thr Asp Leu Ile Tyr Phe Ala Val
225 230 235 240

Gly Ile His Ser Pro Glu Val Arg Phe Asn Arg Leu Leu His Phe Ala
245 250 255

Arg Met Phe Glu Phe Phe Asp Arg Thr Glu Thr Arg Thr Ser Tyr Pro
260 265 270

Asn Ile Phe Arg Ile Ser Asn Leu Val Leu Tyr Ile Leu Val Ile Ile
275 280 285

His Trp Asn Ala Cys Ile Tyr Tyr Val Ile Ser Lys Ser Ile Gly Phe
290 295 300

Gly Val Asp Thr Trp Val Tyr Pro Asn Ile Thr Asp Pro Glu Tyr Gly
305 310 315 320

Tyr Leu Ala Arg Glu Tyr Ile Tyr Cys Leu Tyr Trp Ser Thr Leu Thr
325 330 335

Leu Thr Thr Ile Gly Glu Thr Pro Pro Pro Val Lys Asp Glu Glu Tyr
340 345 350

Leu Phe Val Ile Phe Asp Phe Leu Ile Gly Val Leu Ile Phe Ala Thr
355 360 365

Ile Val Gly Asn Val Gly Ser Met Ile Ser Asn Met Asn Ala Thr Arg
370 375 380

Ala Glu Phe Gln Ala Lys Ile Asp Ala Val Lys His Tyr Met Gln Phe
385 390 395 400

Arg Lys Val Ser Lys Asp Met Glu Ala Lys Val Ile Lys Trp Phe Asp
405 410 415

Tyr Leu Trp Thr Asn Lys Lys Thr Val Asp Glu Arg Glu Val Leu Lys
420 425 430

Asn Leu Pro Ala Lys Leu Arg Ala Glu Ile Ala Ile Asn Val His Leu

10087217.030402

10067217.0304002

435 440 445

Ser Thr Leu Lys Lys Val Arg Ile Phe Gln Asp Cys Glu Ala Gly Leu
450 455 460

Leu Val Glu Leu Val Leu Lys Leu Arg Pro Gln Val Phe Ser Pro Gly
465 470 475 480

Asp Tyr Ile Cys Arg Lys Gly Asp Ile Gly Lys Glu Met Tyr Ile Ile
485 490 495

Lys Glu Gly Lys Leu Ala Val Val Ala Asp Asp Gly Val Thr Gln Tyr
500 505 510

Ala Leu Leu Ser Ala Gly Ser Cys Phe Gly Glu Ile Ser Ile Leu Asn
515 520 525

Ile Lys Gly Ser Lys Met Gly Asn Arg Arg Thr Ala Asn Ile Arg Ser
530 535 540

Leu Gly Tyr Ser Asp Leu Phe Cys Leu Ser Lys Asp Asp Leu Met Glu
545 550 555 560

Ala Val Thr Glu Ala Pro Asp Ala Lys Lys Val Leu Glu Glu Arg Gly
565 570 575

Arg Glu Ile Leu Met Lys Glu Gly Leu Leu Asp Glu Asn Glu Val Ala
580 585 590

Ala Ser Met Glu Val Asp Val Gln Glu Lys Leu Glu Gln Leu Glu Thr
595 600 605

Asn Met Asp Thr Leu Tyr Thr Arg Phe Ala Arg Leu Leu Ala Glu Tyr
610 615 620

Thr Gly Ala Gln Gln Lys Leu Lys Gln Arg Ile Thr Val Leu Glu Thr
625 630 635 640

Lys Met Lys Gln Asn His Glu Asp Asp Tyr Leu Ser Asp Gly Ile Asn
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Thr Pro Glu Pro Thr Ala Ala Glu
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<212> DNA
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 cat aac cat cat cct cct cct tct atc aag gcc aat ggc aaa gat gac 96
 His Asn His His Pro Pro Pro Ser Ile Lys Ala Asn Gly Lys Asp Asp
 20 25 30
 cac agg gca gga agc aga cca cag tct gtg gca gct gat gat gac act 144
 His Arg Ala Gly Ser Arg Pro Gln Ser Val Ala Ala Asp Asp Asp Thr
 35 40 45
 tct cca gaa cta caa agg ctg gca gag atg gat acc cct cgg agg ggg 192
 Ser Pro Glu Leu Gln Arg Leu Ala Glu Met Asp Thr Pro Arg Arg Gly
 50 55 60
 agg ggt ggc ttc caa agg att gtt cgc ctg gtg ggg gtc atc agg gac 240
 Arg Gly Gly Phe Gln Arg Ile Val Arg Leu Val Gly Val Ile Arg Asp
 65 70 75 80
 tgg gcc aac aag aat ttc cgt gaa gag gaa cca agg cct gac tcc ttc 288
 Trp Ala Asn Lys Asn Phe Arg Glu Glu Glu Pro Arg Pro Asp Ser Phe
 85 90 95
 cta gag cgt ttc cgt ggg cca gaa ctc cag act gtg aca acc cat cag 336
 Leu Glu Arg Phe Arg Gly Pro Glu Leu Gln Thr Val Thr Thr His Gln
 100 105 110
 ggg gat gac aaa ggc ggc aag gac ggc gag gga aag ggc acc aaa aag 384
 Gly Asp Asp Lys Gly Gly Lys Asp Gly Glu Gly Lys Gly Thr Lys Lys
 115 120 125
 aaa ttt gaa ctg ttt gtt ttg gac cca gcc gga gac tgg tat tac cgt 432
 Lys Phe Glu Leu Phe Val Leu Asp Pro Ala Gly Asp Trp Tyr Tyr Arg
 130 135 140
 tgg ttg ttt gtc att gcc atg cct gtt ctt tac aac tgg tgc ctg ttg 480
 Trp Leu Phe Val Ile Ala Met Pro Val Leu Tyr Asn Trp Cys Leu Leu
 145 150 155 160
 gtg gcc aga gcc tgc ttc agt gat cta cag aga aac tat ttt gtg gta 528
 Val Ala Arg Ala Cys Phe Ser Asp Leu Gln Arg Asn Tyr Phe Val Val
 165 170 175
 tgg ctg gtg ctg gac tac ttc tca gac act gtc tat atc gca gac ctc 576
 Trp Leu Val Leu Asp Tyr Phe Ser Asp Thr Val Tyr Ile Ala Asp Leu
 180 185 190
 atc att cgg ctg cgc aca ggc ttc cta gaa cag ggg ctc ttg gtc aaa 624
 Ile Ile Arg Leu Arg Thr Gly Phe Leu Glu Gln Gly Leu Leu Val Lys
 195 200 205

gat ccc aag aaa ttg cga gac aac tat att cac act ttg cag ttc aaa Asp Pro Lys Lys Leu Arg Asp Asn Tyr Ile His Thr Leu Gln Phe Lys 210 215 220	672
ttg gat gtg gct tct atc att ccc act gac ctt atc tat ttt gct gtg Leu Asp Val Ala Ser Ile Ile Pro Thr Asp Leu Ile Tyr Phe Ala Val 225 230 235 240	720
ggg atc cac agc cct gag gta cgc ttc aac cgt cta tta cac ttt gcc Gly Ile His Ser Pro Glu Val Arg Phe Asn Arg Leu Leu His Phe Ala 245 250 255	768
cgt atg ttt gag ttc ttt gac cgc act gag aca cgc acc agc tac ccc Arg Met Phe Glu Phe Phe Asp Arg Thr Glu Thr Arg Thr Ser Tyr Pro 260 265 270	816
aac atc ttc cga atc agc aat ctg gtc ctt tac atc ttg gtc atc atc Asn Ile Phe Arg Ile Ser Asn Leu Val Leu Tyr Ile Leu Val Ile Ile 275 280 285	864
cac tgg aat gct tgt att tat tat gtt att tct aag tcc att ggc ttt His Trp Asn Ala Cys Ile Tyr Tyr Val Ile Ser Lys Ser Ile Gly Phe 290 295 300	912
gga gtt gac acc tgg gtt tac ccc aac att act gac cct gaa tat ggc Gly Val Asp Thr Trp Val Tyr Pro Asn Ile Thr Asp Pro Glu Tyr Gly 305 310 315 320	960
tac ctg gct aga gag tac att tac tgt ctt tac tgg tcc aca ctg acc Tyr Leu Ala Arg Glu Tyr Ile Tyr Cys Leu Tyr Trp Ser Thr Leu Thr 325 330 335	1008
ctc acc acc att gga gag aca cca ccc cct gta aag gat gag gag tac Leu Thr Thr Ile Gly Glu Thr Pro Pro Val Lys Asp Glu Glu Tyr 340 345 350	1056
cta ttt gtc atc ttt gac ttc ttg att ggt gtc ctc atc ttt gcc act Leu Phe Val Ile Phe Asp Phe Leu Ile Gly Val Leu Ile Phe Ala Thr 355 360 365	1104
att gtg gga aat gtg ggc tcc atg atc tcc aac atg aat gcc aca cga Ile Val Gly Asn Val Gly Ser Met Ile Ser Asn Met Asn Ala Thr Arg 370 375 380	1152
gca gag ttc cag gcc aag att gat gct gtc aaa cac tac atg cag ttc Ala Glu Phe Gln Ala Lys Ile Asp Ala Val Lys His Tyr Met Gln Phe 385 390 395 400	1200
cga aag gtc agc aaa gac atg gaa gcc aag gtc atc aaa tgg ttt gac Arg Lys Val Ser Lys Asp Met Glu Ala Lys Val Ile Lys Trp Phe Asp 405 410 415	1248
tac ttg tgg acc aat aag aag aca gta gat gaa cga gaa gtc ctc aag Tyr Leu Trp Thr Asn Lys Lys Thr Val Asp Glu Arg Glu Val Leu Lys 420 425 430	1296
aac ctg cca gca aag ctc agg gct gag ata gcc att aat gtt cac ttg Asn Leu Pro Ala Lys Leu Arg Ala Glu Ile Ala Ile Asn Val His Leu 435 440 445	1344

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Met Met Thr Glu Lys Ser Asn Gly Val Lys Ser Ser Pro Ala Asn Asn
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His Asn His His Pro Pro Pro Ser Ile Lys Ala Asn Gly Lys Asp Asp
20 25 30

His Arg Ala Gly Ser Arg Pro Gln Ser Val Ala Ala Asp Asp Asp Thr
35 40 45

Ser Pro Glu Leu Gln Arg Leu Ala Glu Met Asp Thr Pro Arg Arg Gly
50 55 60

Arg Gly Gly Phe Gln Arg Ile Val Arg Leu Val Gly Val Ile Arg Asp
65 70 75 80

Trp Ala Asn Lys Asn Phe Arg Glu Glu Glu Pro Arg Pro Asp Ser Phe
85 90 95

Leu Glu Arg Phe Arg Gly Pro Glu Leu Gln Thr Val Thr Thr His Gln
100 105 110

Gly Asp Asp Lys Gly Gly Lys Asp Gly Glu Gly Lys Gly Thr Lys Lys
115 120 125

Lys Phe Glu Leu Phe Val Leu Asp Pro Ala Gly Asp Trp Tyr Tyr Arg
130 135 140

Trp Leu Phe Val Ile Ala Met Pro Val Leu Tyr Asn Trp Cys Leu Leu
145 150 155 160

Val Ala Arg Ala Cys Phe Ser Asp Leu Gln Arg Asn Tyr Phe Val Val
165 170 175

Trp Leu Val Leu Asp Tyr Phe Ser Asp Thr Val Tyr Ile Ala Asp Leu
180 185 190

Ile Ile Arg Leu Arg Thr Gly Phe Leu Glu Gln Gly Leu Leu Val Lys
195 200 205

Asp Pro Lys Lys Leu Arg Asp Asn Tyr Ile His Thr Leu Gln Phe Lys
210 215 220

Leu Asp Val Ala Ser Ile Ile Pro Thr Asp Leu Ile Tyr Phe Ala Val
225 230 235 240

Gly Ile His Ser Pro Glu Val Arg Phe Asn Arg Leu Leu His Phe Ala
245 250 255

Arg Met Phe Glu Phe Phe Asp Arg Thr Glu Thr Arg Thr Ser Tyr Pro
260 265 270

Asn Ile Phe Arg Ile Ser Asn Leu Val Leu Tyr Ile Leu Val Ile Ile
275 280 285

His Trp Asn Ala Cys Ile Tyr Tyr Val Ile Ser Lys Ser Ile Gly Phe
290 295 300

Gly Val Asp Thr Trp Val Tyr Pro Asn Ile Thr Asp Pro Glu Tyr Gly
305 310 315 320

Tyr Leu Ala Arg Glu Tyr Ile Tyr Cys Leu Tyr Trp Ser Thr Leu Thr
325 330 335

Leu Thr Thr Ile Gly Glu Thr Pro Pro Pro Val Lys Asp Glu Glu Tyr
340 345 350

Leu Phe Val Ile Phe Asp Phe Leu Ile Gly Val Leu Ile Phe Ala Thr
355 360 365

Ile Val Gly Asn Val Gly Ser Met Ile Ser Asn Met Asn Ala Thr Arg
370 375 380

Ala Glu Phe Gln Ala Lys Ile Asp Ala Val Lys His Tyr Met Gln Phe
385 390 395 400

Arg Lys Val Ser Lys Asp Met Glu Ala Lys Val Ile Lys Trp Phe Asp
405 410 415

Tyr Leu Trp Thr Asn Lys Lys Thr Val Asp Glu Arg Glu Val Leu Lys
420 425 430

Asn Leu Pro Ala Lys Leu Arg Ala Glu Ile Ala Ile Asn Val His Leu
435 440 445

Ser Thr Leu Lys Lys Val Arg Ile Phe Gln Asp Trp Glu Ala Gly Leu
450 455 460

Leu Val Glu Leu Val Leu Lys Leu Arg Pro Gln Val Phe Ser Pro Gly
465 470 475 480

Asp Tyr Ile Cys Arg Lys Gly Asp Ile Gly Lys Glu Met Tyr Ile Ile
485 490 495

Lys Glu Gly Lys Leu Ala Val Val Ala Asp Asp Gly Val Thr Gln Tyr
500 505 510

Ala Leu Leu Ser Ala Gly Ser Cys Phe Gly Glu Ile Ser Ile Leu Asn
515 520 525

Ile Lys Gly Ser Lys Met Gly Asn Arg Arg Thr Ala Asn Ile Arg Ser
530 535 540

Leu Gly Tyr Ser Asp Leu Phe Cys Leu Ser Lys Asp Asp Leu Met Glu
545 550 555 560

Ala Val Thr Glu Tyr Pro Asp Ala Lys Lys Val Leu Glu Glu Arg Gly
565 570 575

Arg Glu Ile Leu Met Lys Met Gly Leu Leu Asp Glu Asn Glu Val Ala
580 585 590

Ala Ser Met Glu Val Asp Val Gln Glu Lys Leu Glu Gln Leu Glu Thr
595 600 605

Asn Met Asp Thr Leu Tyr Thr Arg Phe Ala Arg Leu Leu Ala Glu Tyr
610 615 620

Thr Gly Ala Gln Gln Lys Leu Lys Gln Arg Ile Thr Val Leu Glu Thr
625 630 635 640

Lys Met Lys Gln Asn His Glu Asp Asp Tyr Leu Ser Asp Gly Ile Asn
645 650 655

Thr Pro Glu Pro Thr Ala Ala Glu
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cat aac cat cat cct cct cct tct atc aag gcc aat ggc aaa gat gac	96
His Asn His His Pro Pro Pro Ser Ile Lys Ala Asn Gly Lys Asp Asp	
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cac agg gca gga agc aga cca cag tct gtg gca gct gat gat gac act	144
His Arg Ala Gly Ser Arg Pro Gln Ser Val Ala Ala Asp Asp Asp Thr	
35 40 45	
tct cca gaa cta caa agg ctg gca gag atg gat acc cct cgg agg ggg	192
Ser Pro Glu Leu Gln Arg Leu Ala Glu Met Asp Thr Pro Arg Arg Gly	
50 55 60	
agg ggt ggc ttc caa agg att gtt cgc ctg gtg ggg gtc atc agg gac	240
Arg Gly Gly Phe Gln Arg Ile Val Arg Leu Val Gly Val Ile Arg Asp	
65 70 75 80	
tgg gcc aac aag aat ttc cgt gaa gag gaa cca agg cct gac tcc ttc	288
Trp Ala Asn Lys Asn Phe Arg Glu Glu Glu Pro Arg Pro Asp Ser Phe	
85 90 95	
cta gag cgt ttc cgt ggg cca gaa ctc cag act gtg aca acc cat cag	336
Leu Glu Arg Phe Arg Gly Pro Glu Leu Gln Thr Val Thr Thr His Gln	
100 105 110	
ggg gat gac aaa ggc ggc aag gac ggc gag gga aag ggc acc aaa aag	384
Gly Asp Asp Lys Gly Gly Lys Asp Gly Glu Gly Lys Gly Thr Lys Lys	
115 120 125	
aaa ttt gaa ctg ttt gtt ttg gac cca gcc gga gac tgg tat tac cgt	432
Lys Phe Glu Leu Phe Val Leu Asp Pro Ala Gly Asp Trp Tyr Tyr Arg	
130 135 140	
tgg ttg ttt gtc att gcc atg cct gtt ctt tac aac tgg tgc ctg ttg	480
Trp Leu Phe Val Ile Ala Met Pro Val Leu Tyr Asn Trp Cys Leu Leu	
145 150 155 160	
gtg gcc aga gcc tgc ttc agt gat cta cag aga aac tat ttt gtg gta	528
Val Ala Arg Ala Cys Phe Ser Asp Leu Gln Arg Asn Tyr Phe Val Val	
165 170 175	
tgg ctg gtg ctg gac tac ttc tca gac act gtc tat atc gca gac ctc	576
Trp Leu Val Leu Asp Tyr Phe Ser Asp Thr Val Tyr Ile Ala Asp Leu	
180 185 190	
atc att cgg ctg cgc aca ggc ttc cta gaa cag ggg ctc ttg gtc aaa	624
Ile Ile Arg Leu Arg Thr Gly Phe Leu Glu Gln Gly Leu Leu Val Lys	
195 200 205	
gat ccc aag aaa ttg cga gac aac tat att cac act ttg cag ttc aaa	672
Asp Pro Lys Lys Leu Arg Asp Asn Tyr Ile His Thr Leu Gln Phe Lys	
210 215 220	
ttg gat gtg gct tct atc att ccc act gac ctt atc tat ttt gct gtg	720
Leu Asp Val Ala Ser Ile Ile Pro Thr Asp Leu Ile Tyr Phe Ala Val	
225 230 235 240	
ggg atc cac agc cct gag gta cgc ttc aac cgt cta tta cac ttt gcc	768

Gly	Ile	His	Ser	Pro	Glu	Val	Arg	Phe	Asn	Arg	Leu	Leu	His	Phe	Ala		
				245					250					255			
cgt	atg	ttt	gag	ttc	ttt	gac	cgc	act	gag	aca	cgc	acc	agc	tac	ccc	816	
Arg	Met	Phe	Glu	Phe	Phe	Asp	Arg	Thr	Glu	Thr	Arg	Thr	Ser	Tyr	Pro		
			260					265					270				
aac	atc	ttc	cga	atc	agc	aat	ctg	gtc	ctt	tac	atc	ttg	gtc	atc	atc	864	
Asn	Ile	Phe	Arg	Ile	Ser	Asn	Leu	Val	Leu	Tyr	Ile	Leu	Val	Ile	Ile		
			275					280					285				
cac	tgg	aat	gct	tgt	att	tat	tat	gtt	att	tct	aag	tcc	att	ggc	ttt	912	
His	Trp	Asn	Ala	Cys	Ile	Tyr	Tyr	Val	Ile	Ser	Lys	Ser	Ile	Gly	Phe		
			290					295				300					
gga	gtt	gac	acc	tgg	gtt	tac	ccc	aac	att	act	gac	cct	gaa	tat	ggc	960	
Gly	Val	Asp	Thr	Trp	Val	Tyr	Pro	Asn	Ile	Thr	Asp	Pro	Glu	Tyr	Gly		
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tac	ctg	gct	aga	gag	tac	att	tac	tgt	ctt	tac	tgg	tcc	aca	ctg	acc	1008	
Tyr	Leu	Ala	Arg	Glu	Tyr	Ile	Tyr	Cys	Leu	Tyr	Trp	Ser	Thr	Leu	Thr		
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ctc	acc	acc	att	gga	gag	aca	cca	ccc	cct	gta	aag	gat	gag	gag	tac	1056	
Leu	Thr	Thr	Ile	Gly	Glu	Thr	Pro	Pro	Pro	Val	Lys	Asp	Glu	Glu	Tyr		
			340					345					350				
cta	ttt	gtc	atc	ttt	gac	ttc	ttg	att	ggg	gtc	ctc	atc	ttt	gcc	act	1104	
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Ile	Val	Gly	Asn	Val	Gly	Ser	Met	Ile	Ser	Asn	Met	Asn	Ala	Thr	Arg		
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gca	gag	ttc	cag	gcc	aag	att	gat	gct	gtc	aaa	cac	tac	atg	cag	ttc	1200	
Ala	Glu	Phe	Gln	Ala	Lys	Ile	Asp	Ala	Val	Lys	His	Tyr	Met	Gln	Phe		
					390					395					400		
cga	aag	gtc	agc	aaa	gac	atg	gaa	gcc	aag	gtc	atc	aaa	tgg	ttt	gac	1248	
Arg	Lys	Val	Ser	Lys	Asp	Met	Glu	Ala	Lys	Val	Ile	Lys	Trp	Phe	Asp		
				405					410					415			
tac	ttg	tgg	acc	aat	aag	aag	aca	gta	gat	gaa	cga	gaa	gtc	ctc	aag	1296	
Tyr	Leu	Trp	Thr	Asn	Lys	Lys	Thr	Val	Asp	Glu	Arg	Glu	Val	Leu	Lys		
				420				425					430				
aac	ctg	cca	gca	aag	ctc	agg	gct	gag	ata	gcc	att	aat	gtt	cac	ttg	1344	
Asn	Leu	Pro	Ala	Lys	Leu	Arg	Ala	Glu	Ile	Ala	Ile	Asn	Val	His	Leu		
			435					440					445				
tcc	act	ctg	aag	aaa	gtg	cgc	ata	ttc	cag	gat	tgg	gaa	gct	ggc	cta	1392	
Ser	Thr	Leu	Lys	Lys	Val	Arg	Ile	Phe	Gln	Asp	Trp	Glu	Ala	Gly	Leu		
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ctg	gtg	gaa	ctg	gta	ctg	aag	ctt	cgt	cct	cag	gtc	ttt	agt	cct	gga	1440	
Leu	Val	Glu	Leu	Val	Leu	Lys	Leu	Arg	Pro	Gln	Val	Phe	Ser	Pro	Gly		
					470					475					480		
gat	tat	att	tgc	cgt	aag	ggg	gac	att	ggc	aag	gaa	atg	tac	atc	atc	1488	
Asp	Tyr	Ile	Cys	Arg	Lys	Gly	Asp	Ile	Gly	Lys	Glu	Met	Tyr	Ile	Ile		

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Lys	Glu	Gly	Lys	Leu	Ala	Val	Val	Ala	Asp	Asp	Gly	Val	Thr	Gln	Tyr					
			500					505					510							
gcc	ttg	ctc	tca	gct	ggg	agc	tgc	ttt	ggg	gag	att	agt	atc	ctt	aac	1584				
Ala	Leu	Leu	Ser	Ala	Gly	Ser	Cys	Phe	Gly	Glu	Ile	Ser	Ile	Leu	Asn					
		515					520					525								
att	aag	ggg	agc	aaa	atg	ggc	aat	cga	cgt	act	gct	aat	atc	cgt	agc	1632				
Ile	Lys	Gly	Ser	Lys	Met	Gly	Asn	Arg	Arg	Thr	Ala	Asn	Ile	Arg	Ser					
	530					535					540									
ctg	ggc	tac	tca	gat	ctc	ttc	tgc	ttg	tcc	aag	gac	gat	ctt	atg	gaa	1680				
Leu	Gly	Tyr	Ser	Asp	Leu	Phe	Cys	Leu	Ser	Lys	Asp	Asp	Leu	Met	Glu					
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gct	gta	act	gag	gct	cct	gat	gcc	aag	aag	gtc	ctg	gag	gaa	cgg	ggg	1728				
Ala	Val	Thr	Glu	Ala	Pro	Asp	Ala	Lys	Lys	Val	Leu	Glu	Glu	Arg	Gly					
				565					570					575						
agg	gag	atc	ctg	atg	aag	atg	ggg	cta	ctg	gat	gag	aat	gaa	gtg	gca	1776				
Arg	Glu	Ile	Leu	Met	Lys	Met	Gly	Leu	Leu	Asp	Glu	Asn	Glu	Val	Ala					
			580					585					590							
gct	agt	atg	gag	gta	gat	gtt	cag	gag	aag	ctg	gaa	cag	ttg	gag	aca	1824				
Ala	Ser	Met	Glu	Val	Asp	Val	Gln	Glu	Lys	Leu	Glu	Gln	Leu	Glu	Thr					
		595					600					605								
aac	atg	gat	acc	ttg	tac	act	cgc	ttt	gcc	cgc	ctg	ctg	gct	gag	tac	1872				
Asn	Met	Asp	Thr	Leu	Tyr	Thr	Arg	Phe	Ala	Arg	Leu	Leu	Ala	Glu	Tyr					
	610					615					620									
act	ggg	gcc	cag	cag	aag	ctc	aag	caa	cgc	atc	aca	gtg	cta	gag	acc	1920				
Thr	Gly	Ala	Gln	Gln	Lys	Leu	Lys	Gln	Arg	Ile	Thr	Val	Leu	Glu	Thr					
625					630				635						640					
aag	atg	aaa	cag	aac	cat	gag	gat	gat	tat	cta	tca	gat	ggg	ata	aac	1968				
Lys	Met	Lys	Gln	Asn	His	Glu	Asp	Asp	Tyr	Leu	Ser	Asp	Gly	Ile	Asn					
				645				650						655						
act	cct	gag	cca	act	gct	gct	gaa	taa								1995				
Thr	Pro	Glu	Pro	Thr	Ala	Ala	Glu													
			660																	

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 <212> PRT
 <213> Rattus norvegicus

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His	Asn	His	His	Pro	Pro	Pro	Ser	Ile	Lys	Ala	Asn	Gly	Lys	Asp	Asp
			20					25				30			

His Arg Ala Gly Ser Arg Pro Gln Ser Val Ala Ala Asp Asp Asp Thr
35 40 45

Ser Pro Glu Leu Gln Arg Leu Ala Glu Met Asp Thr Pro Arg Arg Gly
50 55 60

Arg Gly Gly Phe Gln Arg Ile Val Arg Leu Val Gly Val Ile Arg Asp
65 70 75 80

Trp Ala Asn Lys Asn Phe Arg Glu Glu Glu Pro Arg Pro Asp Ser Phe
85 90 95

Leu Glu Arg Phe Arg Gly Pro Glu Leu Gln Thr Val Thr Thr His Gln
100 105 110

Gly Asp Asp Lys Gly Gly Lys Asp Gly Glu Gly Lys Gly Thr Lys Lys
115 120 125

Lys Phe Glu Leu Phe Val Leu Asp Pro Ala Gly Asp Trp Tyr Tyr Arg
130 135 140

Trp Leu Phe Val Ile Ala Met Pro Val Leu Tyr Asn Trp Cys Leu Leu
145 150 155 160

Val Ala Arg Ala Cys Phe Ser Asp Leu Gln Arg Asn Tyr Phe Val Val
165 170 175

Trp Leu Val Leu Asp Tyr Phe Ser Asp Thr Val Tyr Ile Ala Asp Leu
180 185 190

Ile Ile Arg Leu Arg Thr Gly Phe Leu Glu Gln Gly Leu Leu Val Lys
195 200 205

Asp Pro Lys Lys Leu Arg Asp Asn Tyr Ile His Thr Leu Gln Phe Lys
210 215 220

Leu Asp Val Ala Ser Ile Ile Pro Thr Asp Leu Ile Tyr Phe Ala Val
225 230 235 240

Gly Ile His Ser Pro Glu Val Arg Phe Asn Arg Leu Leu His Phe Ala
245 250 255

Arg Met Phe Glu Phe Phe Asp Arg Thr Glu Thr Arg Thr Ser Tyr Pro
260 265 270

Asn Ile Phe Arg Ile Ser Asn Leu Val Leu Tyr Ile Leu Val Ile Ile
275 280 285

His Trp Asn Ala Cys Ile Tyr Tyr Val Ile Ser Lys Ser Ile Gly Phe
290 295 300

Gly Val Asp Thr Trp Val Tyr Pro Asn Ile Thr Asp Pro Glu Tyr Gly
305 310 315 320

Tyr Leu Ala Arg Glu Tyr Ile Tyr Cys Leu Tyr Trp Ser Thr Leu Thr
325 330 335

Leu Thr Thr Ile Gly Glu Thr Pro Pro Pro Val Lys Asp Glu Glu Tyr
340 345 350

Leu Phe Val Ile Phe Asp Phe Leu Ile Gly Val Leu Ile Phe Ala Thr
355 360 365

Ile Val Gly Asn Val Gly Ser Met Ile Ser Asn Met Asn Ala Thr Arg
370 375 380

Ala Glu Phe Gln Ala Lys Ile Asp Ala Val Lys His Tyr Met Gln Phe
385 390 395 400

Arg Lys Val Ser Lys Asp Met Glu Ala Lys Val Ile Lys Trp Phe Asp
405 410 415

Tyr Leu Trp Thr Asn Lys Lys Thr Val Asp Glu Arg Glu Val Leu Lys
420 425 430

Asn Leu Pro Ala Lys Leu Arg Ala Glu Ile Ala Ile Asn Val His Leu
435 440 445

Ser Thr Leu Lys Lys Val Arg Ile Phe Gln Asp Trp Glu Ala Gly Leu
450 455 460

Leu Val Glu Leu Val Leu Lys Leu Arg Pro Gln Val Phe Ser Pro Gly
465 470 475 480

Asp Tyr Ile Cys Arg Lys Gly Asp Ile Gly Lys Glu Met Tyr Ile Ile
485 490 495

Lys Glu Gly Lys Leu Ala Val Val Ala Asp Asp Gly Val Thr Gln Tyr
500 505 510

Ala Leu Leu Ser Ala Gly Ser Cys Phe Gly Glu Ile Ser Ile Leu Asn

515

520

525

Ile Lys Gly Ser Lys Met Gly Asn Arg Arg Thr Ala Asn Ile Arg Ser
 530 535 540

Leu Gly Tyr Ser Asp Leu Phe Cys Leu Ser Lys Asp Asp Leu Met Glu
 545 550 555 560

Ala Val Thr Glu Ala Pro Asp Ala Lys Lys Val Leu Glu Glu Arg Gly
 565 570 575

Arg Glu Ile Leu Met Lys Met Gly Leu Leu Asp Glu Asn Glu Val Ala
 580 585 590

Ala Ser Met Glu Val Asp Val Gln Glu Lys Leu Glu Gln Leu Glu Thr
 595 600 605

Asn Met Asp Thr Leu Tyr Thr Arg Phe Ala Arg Leu Leu Ala Glu Tyr
 610 615 620

Thr Gly Ala Gln Gln Lys Leu Lys Gln Arg Ile Thr Val Leu Glu Thr
 625 630 635 640

Lys Met Lys Gln Asn His Glu Asp Asp Tyr Leu Ser Asp Gly Ile Asn
 645 650 655

Thr Pro Glu Pro Thr Ala Ala Glu
 660